WHAT IS CLAIMED IS:

1. A scroll thrust bearing having a plurality of both-end conical rollers rotatably held between a pair of parallel bearing plates,

wherein said both-end conical rollers are composed of conical bodies having a pair of conical surfaces matched coaxially, and the relation of the scroll swirl radius (R) and the dimension (H) between opposite tracks of the both bearing plates is set in a relation of $1 < H/R < 5$.

2. The scroll thrust bearing of claim 1,

wherein said pair of conical surfaces of the both-end conical roller are bonded at the bottom, and the bonded bottom of the both conical surfaces has a junction surface including an arc section continuous to the both conical surfaces, so that the contact length in the generator direction of the both conical surfaces to the track on the both bearing plates is set to be as small as possible.

3. The scroll thrust bearing of claim 1,

wherein the conical surface of the both-end conical roller is processed by crowning.

4. The scroll thrust bearing of claim 3,

wherein the load applied to the conical surfaces of the both-end conical rollers is set to be biased to the larger diameter side of the conical surfaces.

~~5. The scroll thrust bearing of claim 1,~~

wherein a plurality of track pockets are provided oppositely to the pair of bearing plates, the both-end conical rollers are rotatably held in the opposing pair of track pockets, and the pair of bearing plates are linked and held by linking means in a relatively swirling state.

6. The scroll thrust bearing of claim 5,

wherein a clearance for avoiding interference with the inside of the track pockets is provided in the bonded bottom of the both-end conical rollers.

7. The scroll thrust bearing of claim 5,

wherein said linking means is a pair of linking pins fixed to the both bearing plates, this linking pin has an engaging flange at the leading end, and a swirl shaft at the axial direction base end of the engaging flange, the engaging flange of the linking pin of the both bearing plates swirls and slides relatively on the outer surface of the swirl shaft of the linking pin of each opposite side bearing plate, and the both bearing plates are held in a relatively rotatable state in the same tracking as the swirl circle of the both-end conical rollers.

8. The scroll thrust bearing of claim 5,

wherein said linking means is composed of a linking pin fixed to either one bearing plate of the both bearing plates, and a linking recess disposed in other bearing plate, corresponding to the linking pin to be engaged with this linking pin, said linking pin has a swirl shaft at its leading end, and an engaging

flange at the axial direction base end side of this swirl shaft, said linking recess has a swirl pin rotatably sliding on the swirl shaft of the linking in its inside, and an opening is formed as a fastening flange of a smaller diameter than the outside diameter of the engaging flange of the linking pin, so that the both bearing plates are held in a relatively rotatable state in the same tracking as the swirl circle of the both-end conical roller.

9. The scroll thrust bearing of claim 5,

wherein said track pocket has an inner side of same inside diameter as the swirl circle of the both-end conical roller, the inner sides of the opposing pair of track pockets are disposed in an eccentric state by the portion of the radius of the swirl circle of the both-end conical roller mutually in a plane view, and the both-end conical rollers are guided and held in nearly elliptical holding holes formed by overlaying these inner sides.

10. The scroll thrust bearing of claim 1, further comprising:

a holder for positioning and holding the both-end conical rollers rotatably in a specified configuration, and

rotation preventive mechanism for preventing relative rotation of the both bearing plates.

11. The scroll thrust bearing of claim 10,

wherein the both bearing plates are in a form of flat

annular races, and the confronting flat planes of these races are tracks for rolling of the both-end conical rollers, said holder is in a form of a holding plate of a flat annular shape corresponding to the bearing plates, this holding plate is provided with holding pockets for rotatably holding the both-end conical rollers at specific intervals in the circumferential direction, and the both-end conical rollers rotatably held in the holding pockets of the holding plate are allowed to roll on the track of one bearing plate at one conical surface, while the other conical surface rolls on the track of the other bearing plate.

12. The scroll thrust bearing of claim 11,

wherein the holding pocket of the holding plate is formed as a pocket hole penetrating through both sides of the holding plate, this pocket hole is formed as a holding space having the inside diameter slightly larger than the maximum diameter of the both-end conical roller in its inside, and its opening is a circular hole of a slightly smaller diameter than the maximum diameter of the both-end conical roller.

13. The scroll thrust bearing of claim 10,

wherein the outside diameter of the junction surface of the bonded bottom of the both-end conical roller is set slightly smaller than the maximum diameter of the both-end conical roller, the holding pocket of the holding plate is formed as a pocket hole penetrating through both sides of the holding plate, this

pocket hole is formed as a circular hole slightly larger than the junction surface of the both-end conical roller in its inside, and having a slightly smaller diameter than the maximum diameter of the both-end conical roller.

14. The scroll thrust bearing of claim 10,

wherein said rotation preventive mechanism is composed of rolling balls rotatably held in the ball pockets of the holder, and a pair of ball tracks disposed oppositely to the confronting surfaces of the both bearing plates, the opposing pair of ball tracks have annular ball tracks engaged with the rolling balls so as to roll on, and when the rolling balls roll and run on the pair of ball tracks, the both bearing plates swirl relatively in the same tracking as the swirl circle of the both-end conical rollers, and at least three sets of the rolling balls and pair of ball tracks are disposed, so that relative rotation of the both bearing plates is prevented.

15. The scroll thrust bearing of claim 10,

wherein said rotation preventive mechanism is composed of a pair of swirl pins fixed oppositely to the both bearing plates, and swirl holes penetrating through the holding plate, the swirl holes are cylindrical holes to be engaged with the opposing pair of swirl pins slidably, the pair of swirl pins are guided slidably on the cylindrical holes, and the both bearing plates swirl relatively in the same tracking as the swirl circle of the both-end conical rollers, and at least three sets of the

pair of swirl pins and swirl holes are disposed, so that relative rotation of the both bearing plates is prevented.

16. The scroll thrust bearing of claim 10,

wherein the both-end conical rollers are disposed between the both bearing plates in one row or plural rows at specific intervals in the circumferential direction.

17. The scroll thrust bearing of claim 1,

wherein the pair of bearing plates are provided with a plurality of track pockets oppositely, and the both-end conical rollers are rotatably held in the opposing pair of track pockets, and further swirl defining means for defining the relative swirl radius of the pair of bearing plates, and plate linking means for linking and holding the interval dimension of the pair of bearing plates in a specified range are provided, so that the pair of bearing plates are linked and held in a relatively swirling state.

18. The scroll thrust bearing of claim 17,

wherein said swirl defining means is a pair of swirl pins fixed individually to the both bearing plates, these swirl pins have swirl shafts having mutually sliding cylindrical surfaces, and the axial center distance of the swirl shafts is set according to the swirl radius of the both bearing plates.

19. The scroll thrust bearing of claim 18,

wherein the pair of swirl pins are of identical structure, and the radius of the swirl shaft of the both swirl pins is set

at 1/2 of the swirl radius of the both bearing plates.

20. The scroll thrust bearing of claim 17,

wherein said plate linking means is a linking pin fixed in either bearing plate of the both bearing plates, and engaged with other bearing plate, and the engaging structure of this linking pin and other bearing plate is designed to prevent separation of both bearing plates in the axial direction while allowing relative swirl motion of the both bearing plates.

21. The scroll thrust bearing of claim 20,

wherein the engaging structure of this linking pin and other bearing plate is composed of a disk-shaped outward engaging flange provided at the leading end of the linking pin, and an engaging hole having an annular inward engaging flange provided in the other bearing plate, the shape and dimension of the inward engaging flange are set according to the swirl radius of the both bearing plates, the linking pin is disposed in a eccentric relation to the engaging hole, so that the outward engaging flange and inward engaging flange may be engaged with each other always in the axial direction, corresponding to the relative swirl motion of the both bearing plates.

22. The scroll thrust bearing of claim 17,

wherein the track pocket has a cylindrical inner surface of the same inside diameter as the swirl circle of the both-end conical roller, and a flat track surface on which the both-end conical rollers roll, the both-end conical rollers held in

a pair of track pockets confronting the pair of bearing plates are allowed to roll on the track of one track pocket at one conical surface, while the other conical surface rolls on the track of the other track pocket, the opposing pair of track pockets are disposed in an eccentric state by the portion of the radius of the swirl circle of the both-end conical roller mutually, and the both-end conical rollers are guided and held in nearly elliptical holding holes formed by overlaying these inner sides.

23. The scroll thrust bearing of claim 1, wherein the pair of bearing plates have positioning parts to be engaged with the fixed side or swirl side positioning part of the device swirl unit to be assembled in.